

WHAT IS CLAIMED IS:

1. A transmission power control apparatus
for a wireless communication apparatus for reducing
5 a power value of a signal input to a power amplifier
to the maximum allowable input power value of said
power amplifier or below, said transmission power
control apparatus comprising:

10 a setting part for setting a transmission
power upper limit value of a call according to a
circuit type of said call; and

15 a power reducing part for reducing
transmission power for said call to said
transmission power upper limit value or below.

20 2. The transmission power control
apparatus as claimed in claim 1, wherein said
setting part sets said transmission power upper
limit value according to a degree of delay which can
be allowed for said circuit type.

25 3. The transmission power control
apparatus as claimed in claim 1, wherein said
30 setting part sets a first upper limit value for a
call of a packet switching type or a second upper
limit value for a call of a circuit switching type.

35

4. The transmission power control

10050861-011802

apparatus as claimed in claim 3, wherein said first upper limit value is smaller than said second upper limit value.

5

5. The transmission power control apparatus as claimed in claim 3, wherein said setting part monitors occurrence of over-input to said power amplifier, and sets another transmission power upper limit value when said over-input occurs.

15

6. The transmission power control apparatus as claimed in claim 5, wherein, said setting part reduces said first upper limit value by a first predetermined ratio when said over-input to said power amplifier occurs, and said setting part increases said first upper limit value by a second predetermined ratio which is lower than said first predetermined ratio when said over-input to said power amplifier does not occur.

30

7. The transmission power control apparatus as claimed in claim 1, wherein said setting part monitors occurrence of over-input to said power amplifier, and sets another transmission power upper limit value when said over-input occurs.

35

10050861-011302

8. The transmission power control apparatus as claimed in claim 1, wherein said setting part monitors occurrence of call loss, and
5 sets another transmission power upper limit value when said call loss occurs.

10

9. A transmission power control apparatus for a wireless communication apparatus for reducing a power value of a signal input to a power amplifier to the maximum allowable input power value of said
15 power amplifier or below, said transmission power control apparatus comprising:

an SIR determining part for determining a control target SIR according to a circuit type of a call;

20

a target SIR setting part for sending said control target SIR to a communication station corresponding to said call.

25

10. The transmission power control apparatus as claimed in claim 9, wherein said SIR determining part sets said control target SIR
30 according to a degree of delay which can be allowed for said circuit type.

35

11. The transmission power control apparatus as claimed in claim 9, wherein said SIR

10050861.011802

determining part sets a first control target SIR for a call of a packet switching type or a second control target SIR for a call of a circuit switching type.

5

12. The transmission power control apparatus as claimed in claim 11, wherein said first control target SIR is smaller than said second control target SIR.

15

13. The transmission power control apparatus as claimed in claim 11, wherein said SIR determining part monitors occurrence of over-input to said power amplifier, and sets another control target SIR when said over-input occurs.

25

14. The transmission power control apparatus as claimed in claim 13, wherein, said SIR determining part reduces said first control target SIR by a first predetermined ratio when said over-input to said power amplifier occurs, and said SIR determining part increases said first control target SIR by a second predetermined ratio which is lower than said first predetermined ratio when said over-input to said power amplifier does not occur.

35

10050861-011802

15. The transmission power control apparatus as claimed in claim 9, wherein said SIR determining part monitors occurrence of over-input to said power amplifier, and sets another control target SIR when said over-input occurs.

10

16. The transmission power control apparatus as claimed in claim 9, wherein said SIR determining part monitors occurrence of call loss, and sets another control target SIR when said call loss occurs.

15

20

17. The transmission power control apparatus as claimed in claim 1, wherein said transmission power control apparatus is provided in a base station of a wireless communication system.

25

18. The transmission power control apparatus as claimed in claim 9, wherein said transmission power control apparatus is provided in a base station of a wireless communication system.

30

35

19. A mobile station for communicating with a base station, said base station comprising:

10050861.011802

a part for comparing a received SIR with a target SIR which is stored in said base station, and sending transmission power control information to said base station according to the comparing result;

5 a part for receiving a control target SIR from said base station, and setting said control target SIR as a new target SIR to be compared with said received SIR;

10 wherein said base station includes a transmission power control apparatus for reducing a power value of a signal input to a power amplifier to the maximum allowable input power value of said power amplifier or below, said transmission power control apparatus comprising:

15 an SIR determining part for determining said control target SIR according to a circuit type of a call;

a target SIR setting part for sending said control target SIR to said mobile station.

20

20. A transmission power control method used for a wireless communication apparatus for reducing a power value of a signal input to a power amplifier to the maximum allowable input power value of said power amplifier or below, said transmission power control method comprising the steps of:

30 setting a transmission power upper limit value for a call according to a circuit type of said call; and

reducing transmission power for said call to said transmission power upper limit value or below.

35

10050861.011802

21. The transmission power control method
as claimed in claim 20, wherein said transmission
5 power upper limit value is set according to a degree
of delay which can be allowed for said circuit type.

10 22. The transmission power control method
as claimed in claim 20, wherein a first upper limit
value for a call of a packet switching type or a
15 second upper limit value for a call of a circuit
switching type is set as said transmission power
upper limit value.

20 23. The transmission power control method
as claimed in claim 22, wherein said first upper
limit value is smaller than said second upper limit
value.

25 24. The transmission power control method
30 as claimed in claim 22, wherein another transmission
power upper limit value is set when said over-input
to said power amplifier occurs.

35

25. The transmission power control method

10050861-011302

as claimed in claim 24, comprising the steps of:

reducing said first upper limit value by a first predetermined ratio when said over-input to said power amplifier occurs;

5 increasing said first upper limit value by a second predetermined ratio which is lower than said first predetermined ratio when said over-input to said power amplifier does not occur.

10

26. The transmission power control method as claimed in claim 20, wherein another transmission power upper limit value is set when over-input to said power amplifier occurs.

20

27. The transmission power control method as claimed in claim 20, wherein another transmission power upper limit value is set when call loss occurs.

25

28. A transmission power control method used for a wireless communication apparatus for reducing a power value of a signal input to a power amplifier to the maximum allowable input power value of said power amplifier or below; said transmission power control method comprising the steps of:

30 determining a control target SIR according to a circuit type of a call; and

35 sending said control target SIR to a communication station corresponding to said call.

10050861.011802

5 29. The transmission power control method
as claimed in claim 28, wherein said control target
SIR is set according to a degree of delay which can
be allowed for said circuit type.

10

 30. The transmission power control method
as claimed in claim 28, wherein a first control
15 target SIR for a call of a packet switching type or
a second control target SIR for a call of a circuit
switching type is set.

20

 31. The transmission power control method
as claimed in claim 30, wherein said first control
target SIR is smaller than said second control
25 target SIR.

30

 32. The transmission power control method
as claimed in claim 30, wherein another control
target SIR is set when over-input to said power
amplifier occurs.

35

10050861.011302

33. The transmission power control method as claimed in claim 32, comprising the steps of:

reducing said first control target SIR by a first predetermined ratio when said over-input to said power amplifier occurs;

increasing said first control target SIR by a second predetermined ratio which is lower than said first predetermined ratio when said over-input to said power amplifier does not occur.

10

34. The transmission power control method as claimed in claim 28, wherein another control target SIR is set when over-input to said power amplifier occurs.

20

35. The transmission power control method as claimed in claim 28, wherein another control target SIR is set when call loss occurs.

25

36. A transmission power control apparatus for a wireless communication apparatus for reducing a power value of a signal of calls input to a power amplifier to the maximum allowable input power value of said power amplifier or below, said transmission power control apparatus comprising:

a classifying part for classifying calls into a plurality of groups;

a power reducing part for reducing a power

10050861.011802

value individually for each group such that a power value of said calls is equal to or below the maximum allowable input power value of said power amplifier.

5

37. The transmission power control apparatus as claimed in claim 36, wherein said power reducing part sets an upper limit value of power for each group, and reduces a power value to said upper limit value or below for each group.

15

38. The transmission power control apparatus as claimed in claim 37, wherein said classifying part classifies said calls according to degree of delay which is allowed by a circuit type of each call.

25

39. The transmission power control apparatus as claimed in claim 37, wherein said classifying part classifies said calls into a group of a circuit switching type and a group of a packet switching type.

35

40. The transmission power control apparatus as claimed in claim 39, wherein said upper limit value for a group of said packet switching

10050861.011302

type is smaller than said upper limit value for a group of said circuit switching type.

5

41. The transmission power control apparatus as claimed in claim 39, wherein said power reducing part reduces only a power value of a group of said packet switching type.

10

42. The transmission power control apparatus as claimed in claim 37, wherein the number of said plurality of groups and said upper limit value for each group are changed according to types of said calls.

15

20

43. The transmission power control apparatus as claimed in claim 36, wherein said classifying part assigns priority for each call according to circuit characteristics of said each call, and said power reducing part reduces a power value of a call according to said priority.

25

30

44. The transmission power control apparatus as claimed in claim 43, wherein said classifying part assigns said priority such that the larger a degree of delay, which is allowed by said

35

10050861.011302

call is, the lower said priority is, and,

said power reducing part reduces each power value of a part of calls in ascending order of said priority such that a power value of calls input to said power amplifier is equal to or below the maximum allowable input power value of said power amplifier.

10

45. The transmission power control apparatus as claimed in claim 44, wherein said power reducing part does not reduce a power value of a call which has priority within predetermined levels from the highest priority.

15

20

46. A base station in a wireless communication system, said base station comprising:

a transmission power control apparatus for reducing a power value of a signal of calls input to a power amplifier to the maximum allowable input power value of said power amplifier or below, said transmission power control apparatus comprising:

25

a classifying part for classifying calls into a plurality of groups;

30

a power reducing part for reducing a power value individually for each group such that a power value of said calls is equal to or below the maximum allowable input power value of said power amplifier.

35

10050861-011802

47. A transmission power control method used for a wireless communication apparatus for reducing a power value of a signal of calls input to a power amplifier to the maximum allowable input power value of said power amplifier or below, said transmission power control method comprising the steps of:

classifying calls into a plurality of groups;
reducing a power value individually for each group such that a power value of said calls is equal to or below the maximum allowable input power value of said power amplifier.

48. The transmission power control method as claimed in claim 47, wherein an upper limit value of power is set for each group, and a power value is reduced to said upper limit value or below for each group.

49. The transmission power control method as claimed in claim 48, wherein said calls are classified according to degree of delay which is allowed by a circuit type of each call.

50. The transmission power control method as claimed in claim 49, wherein said calls are classified into a group of a circuit switching type

10050861-011802

and a group of a packet switching type.

5

51. The transmission power control method
as claimed in claim 50, wherein said upper limit
value for a group of said packet switching type is
smaller than said upper limit value for a group of
10 said circuit switching type.

15

52. The transmission power control method
as claimed in claim 50, wherein only a power value
of a group of said packet switching type is reduced.

20

53. The transmission power control method
as claimed in claim 48, wherein the number of said
plurality of groups and said upper limit value for
25 each group are changed according to types of said
calls.

30

54. The transmission power control method
as claimed in claim 47, comprising the steps of:

assigning priority for each call according
to circuit characteristics of said call; and

35

reducing a power value of a call according
to said priority.

10050861-011802

55. The transmission power control method
5 as claimed in claim 54, comprising the steps of:
assigning said priority such that the
larger a degree of delay which is allowed by said
call is, the lower said priority is; and
reducing each power value of a part of
10 calls in ascending order of said priority such that
a power value of calls input to said power amplifier
is equal to or below the maximum allowable input
power value of said power amplifier.

15

56. The transmission power control method
as claimed in claim 55, wherein a power value of a
20 call which has priority within predetermined levels
from the highest priority is not reduced.

25

57. The transmission power control method
as claimed in claim 54, comprising the steps of:
assigning said priority such that the
larger a degree of delay which can be allowed by
30 said call, the lower said priority is;
determining at least a power reduction
subject call from a call having the lowest priority
in ascending order of priority such that a power
value of calls input to said power amplifier becomes
35 equal to or below said maximum allowable input power
value if it is assumed that each power value of said
at least a power reduction subject call is reduced

10050861.011802

to a minimum power value which can maintain
synchronization;

reducing each power value of calls in said
at least a power reduction subject call other than
5 calls having the highest priority in said at least a
power reduction subject call to a minimum power
value which can maintain synchronization; and

reducing each power value of calls having
the highest priority in said at least a power
10 reduction subject call evenly by a predetermined
ratio such that a power value of calls input to said
power amplifier becomes equal to or below said
maximum allowable input power value.

15

20

25

30

35

10050851.011802